BIOLOGICAL THREATS

Biological Attack

The deliberate use of microorganisms or toxins derived from living organisms to induce death or disease in humans, animals, or plants.

EVOLUTION OF BIOLOGICAL WEAPONS

1346

- Mongols catapulted plague-infected cadavers into a Ukrainian city.

1763

- British officers gave blankets contaminated with smallpox to Native Americans during the French and Indian War.

EVOLUTION OF BIOLOGICAL WEAPONS IN THE 20th Century

1916-1918

German agents used anthrax and glanders to infect livestock and animal feed exported to France

1937 – 1970's

Various countries, including the U. S., conducted research on the development of biological weapons. Some even tested them on POWs.

1969

U. S. terminated offensive biological weapons program.

1970-1972

U. S. stockpiles of agents destroyed. Defensive research continues today.

BIOLOGICAL THREATS ARE ALWAYS WITH US

Emerging Diseases

At least 30 previously unknown diseases recognized in the last 25 years

- West Nile Virus
- Lyme Disease
- HIV
- Legionnaire's Disease

Changes in Virulence of Current Organisms

1918: 20 million people world-wide died from influenza

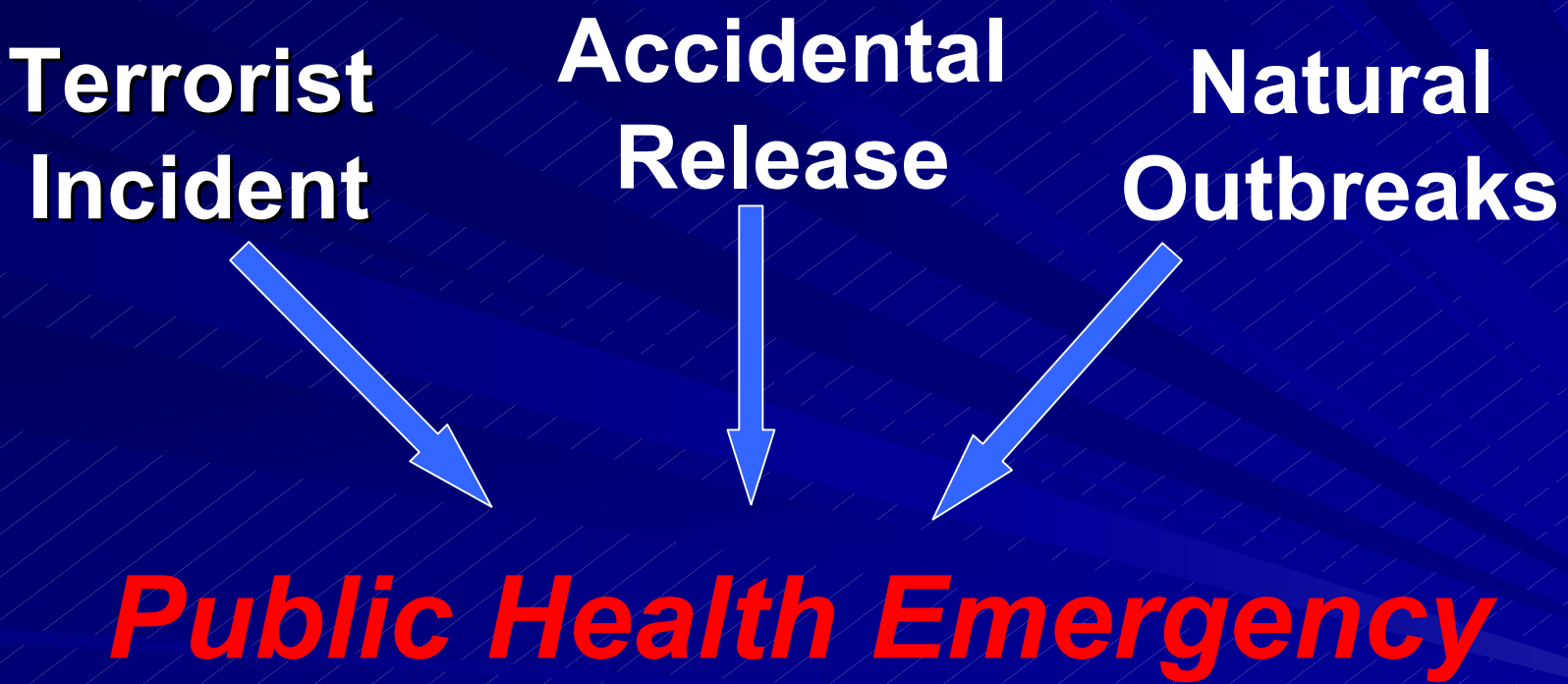
THE FEAR OF BIOTERRORISM

- *The fear of what we don't understand*
- *Society is influenced by the popular press*
- *Education is critically important*

"ADVANTAGES" OF BIOLOGICAL AGENTS FOR TERRORIST USE

- Large number of casualties at low cost
- Relatively easy to produce
- Easy to hide
- Difficult to detect
- Invisible, odorless, and tasteless

BIOLOGICAL CONCERNS



THREE REQUIREMENTS FOR BIOTERRORISM

- Ability to acquire agents
- Ability to disseminate agents
- Desire to use agents

POTENTIAL AGENTS FOR A BIOLOGICAL ATTACK

Category A Agents

- Greatest potential for adverse public health impact with mass casualties
- Moderate to high potential for large scale dissemination

Bacterial

Viral

Bacterial Toxins

CATEGORY A AGENTS: Bacterial Agents

Agent	Incubation	Symptoms	Transmission	Treatment
Anthrax (Inhalation)	1-6 days Range from 1 day to 8 weeks	Flu-like, Respiratory distress	No Person to Person	Antibiotic Therapy
Anthrax (Cutaneous)	1-6 days Range from 1 day to 8 weeks	Initial itching, papule, then ulceration	No Person to Person	Antibiotic Therapy
Plague (Inhalation)	1-3 days	Sudden onset of fever, chills, etc. Pneumonic – Cough, chest pain	Person to Person with close contact	Antibiotic Therapy
Plague (Other contact)	1-3 days	Bubonic – Painful lymph node swelling	No Person to Person	Antibiotic Therapy
Tularemia (Inhalation)	2-5 days Range from 1 to 21 days	Fever, cough, chest tightness	No Person to person	Antibiotic Therapy
Tularemia (Other contact)	2-5 days Range from 1 to 21 days	Cutaneous ulcer, enlarged painful lymph nodes	No Person to person	Antibiotic Therapy

CATEGORY A AGENTS

Viral Agents

Agent	Incubation	Symptoms	Transmission	Treatment
Smallpox	12-14 days	Fever, Headache, itching followed by rash on face and extremities	Person to Person airborne	Supportive care, possible antiviral drugs
Viral Hemorrhagic Fevers: Ebola, Marburg, Lassa, Machupo	Up to 21 days	Fever, Headache followed by severe systemic disease and severe hemorrhaging	Person to Person with close contact	Supportive care and antiviral drugs

CATEGORY A AGENTS

Bacterial Toxins

Agent	Incubation	Symptoms	Transmission	Treatment
Botulism, ingestion of toxin	12-72 hours	Nervous System involvement – difficulty swallowing, descending weakness	No Person to Person	Mechanical ventilation and antitoxin

POTENTIAL AGENTS FOR A BIOLOGICAL ATTACK

Category B Agents

- Some potential for large scale dissemination with resultant illness
- Cause less illness and death than Category A Agents

CATEGORY B AGENTS

- Viral Encephalitis
- Q Fever
- Brucellosis
- Glanders
- Melioidosis
- Psittacosis
- Typhus
- Ricin Toxin
- Cholera – Food and waterborne disease
- Shigellosis – Food and waterborne disease

RECOGNITION OF A BIOLOGICAL INCIDENT

May be difficult because:

1. Generally colorless, odorless and tasteless
2. Effects are not immediate, maybe days to weeks

CLUES WHICH MIGHT INDICATE AN INTENTIONAL BIOLOGICAL INCIDENT

- Many cases of unexplained disease or death
- A disease that is unusual for a given geographic area or season
- A disease normally transmitted by a vector that is not present in local area
- Unusual strains of organisms
- Unusual route of exposure
- A disease not known to exist in this country

Agency response to Suspected or Actual Introduction of Biological Agent by Aerosol or Powder

Within the Facility:

1. Notify police (911) and appropriate agency personnel.
2. Immediately alert others in immediate area.
3. Secure the area: close doors, shut down air handling equipment, put up signs. Do not disturb the area.
4. Move employees to areas where air movement is low.
5. Follow instruction of investigating team as to decontamination requirements.

Agency response to Suspected or Actual Introduction of Biological Agent by Aerosol or Powder

Outside the Facility:

1. Notify police (911) and appropriate agency personnel.
2. Shut down the air handling equipment so no outside air is introduced to the building.
3. Require that all employees remain in the facility until released by appropriate authorities.
4. Follow instructions of investigating teams as to decontamination requirements.

SUMMARY

Biological agents present a unique threat to the workplace in that:

1. The agents are generally colorless, odorless, and tasteless. Therefore, one may not be aware that exposure has occurred.
2. Agents may be bacterial, viral, or a toxin.
3. With both bacterial and viral agents, the resulting disease may not manifest itself for three days to weeks, depending on the agent.
4. Initial symptoms may be very similar to commonly occurring disease such as influenza.
5. The agents can be dispersed in a number of ways, i.e., as a powder (anthrax), as an aerosol, or added to food or water (toxins).
6. Some agents (smallpox and plague) may be spread from person to person by direct contact.

SUMMARY (cont.)

Things to Consider in Lowering the Risk of Introduction of a Biological Agent:

1. Air Handling Equipment – Check frequently to assure access has not been breached.
2. Water supply – monitor access.
3. Know those with access to the premises. This would include cleaning crews, maintenance workers, etc.
4. Follow guidelines on handling suspicious letters and packages.

SUMMARY (cont.)

Agency Recognition of the Introduction of a Biological Agent

Because of the delay of three days to weeks for some biological agents to manifest themselves in employees, recognition of an exposure may be difficult to recognize, but it is vital that early recognition be made so that appropriate treatment can begin.

SUMMARY (cont.)

Agencies should closely monitor employee absenteeism. Any steep rise should be investigated.

1. If employees call in, get information on type of illness the employee is experiencing.
2. Contact either the State or county health department to see if there are reports of an epidemic of the same type being reported. This is very important as a number of the possible agents produce early nonspecific illness.
3. It is also possible that exposure to an agent did not occur at the work site but at an event attended by a number of employees (sporting event, etc.)